

Abstract

Expressed Sequence Tags (ESTs) isolated from the unicellular red algae, *Cyanidium*  
5 *caldarium*, are disclosed. The invention encompasses nucleic acid molecules that encode  
*Cyanidium caldarium* protein homologs and fragments thereof. In addition, antibodies capable of  
binding the proteins are encompassed by the present invention. The disclosed ESTs have  
particular utility in isolating genes and promoters, identifying and mapping the genes involved in  
developmental and metabolic pathways, and determining gene function. The ESTs provide a  
10 unique molecular tool for the targeting and isolation of novel genes for plant protection and  
improvement. The invention also relates to methods of using the disclosed nucleic acid  
molecules, proteins, fragments of proteins, and antibodies, for example, for gene identification  
and analysis, and preparation of constructs.